



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
NATIONAL MARINE FISHERIES SERVICE  
Northwest Region  
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Refer to:  
2003/00925

December 4, 2003

Larry Timchak  
Ochoco National Forest  
Lookout Mountain Ranger District  
3160 NE Third Street  
Prineville, OR 97754

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the Proposed Dick Creek, Trout Creek, and Cartwright Creek Culvert Projects in the Trout Creek subbasin, Crook County, Oregon

Dear Mr. Timchak:

Enclosed is a document containing a biological opinion (Opinion) prepared by NOAA's National Marine Fisheries Service (NOAA Fisheries) pursuant to section 7 of the Endangered Species Act (ESA) on the effects of carrying out the proposed Dick Creek, Trout Creek, and Cartwright Creek Culvert Project in the Lower Deschutes River subbasin, Crook County, Oregon. In this Opinion, NOAA Fisheries concludes that the proposed action is not likely to jeopardize the continued existence of ESA-listed Middle Columbia River (MCR) steelhead (*Oncorhynchus mykiss*). As required by section 7 of the ESA, NOAA Fisheries includes reasonable and prudent measures with nondiscretionary terms and conditions that NOAA Fisheries believes are necessary to minimize the level of incidental take associated with this action.

This document also contains a consultation on essential fish habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and its implementing regulations (50 CFR Part 600). NOAA Fisheries concludes that the proposed action will adversely affect designated EFH for chinook salmon (*O. tshawytscha*). As required by section 305(b)(4)(A) of the MSA, included are conservation recommendations that NOAA Fisheries believes will avoid, minimize, mitigate, or otherwise offset adverse effects on EFH resulting from the proposed action. As described in the enclosed consultation, 305(b)(4)(B) of the MSA requires that a Federal action agency must provide a detailed response in writing within 30 days of receiving an EFH conservation recommendation.



If you have any questions regarding this letter, please contact Brett Farman of my staff in the Oregon Habitat Branch at 541.975.1835, ext.228.

Sincerely,

A handwritten signature in cursive script that reads "Michael R Couse". To the left of the signature is a small, dark, handwritten mark that appears to be "f.1".

D. Robert Lohn  
Regional Administrator

cc: Steve Pribyl, ODFW  
Jennifer O'Reily, USFWS

# Endangered Species Act - Section 7 Consultation Biological Opinion

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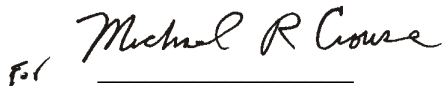
## Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation

Dick Creek, Trout Creek, and Cartwright Creek Culvert Projects  
in the Trout Creek Subbasin, Crook County, Oregon

Agency: U.S. Forest Service

Consultation  
Conducted By: National Marine Fisheries Service,  
Northwest Region

Date Issued: December 5, 2003

Issued by:   
D. Robert Lohn  
Regional Administrator

Refer to: 2003/00925

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## **1. INTRODUCTION**

The Endangered Species Act (ESA) of 1973 (16 USC 1531-1544), as amended, establishes a national program for conserving threatened and endangered species of fish, wildlife, plants, and the habitat on which they depend. Section 7(a)(2) of the ESA requires Federal agencies to consult with NOAA's National Marine Fisheries Service (NOAA Fisheries) and U.S. Fish and Wildlife Service (together "Services"), as appropriate, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or adversely modify or destroy their designated critical habitats. This biological opinion (Opinion) is the product of an interagency consultation pursuant to section 7(a)(2) of the ESA and implementing regulations 50 CFR 402.

The analysis also fulfills the essential fish habitat (EFH) requirements under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance EFH for those species regulated under a Federal fisheries management plan. Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH (section 305(b)(2)).

The U.S. Forest Service (USFS), Ochoco National Forest (ONF) proposes to replace an existing culvert on Dick Creek, remove and reset an existing culvert on Trout Creek, and replace streambed material at the inlet of a culvert on Cartwright Creek. The purpose of the Dick Creek, Trout Creek, and Cartwright Creek Culvert activities (Project) is to improve fish passage and is expected to improve instream flow conditions. The administrative record for this consultation is on file at the Oregon State Habitat Office in Portland, Oregon.

### **1.1 Background and Consultation History**

On July 22, 2003, NOAA Fisheries received a letter dated July 18, 2003, with attached Project information from the ONF requesting ESA section 7 formal consultation on the proposed Project indicating that the Project "may affect, and is likely to adversely affect" (LAA) Middle Columbia River (MCR) steelhead (*Oncorhynchus mykiss*). Project information provided by the ONF indicates that short-term, localized adverse effects, such as bank and streambed destabilization, minor riparian vegetation removal, sedimentation, and turbidity, are likely to result from Project implementation.

Consultation was initiated upon the receipt of the complete biological assessment (BA) and EFH assessment for the proposed Project on July 22, 2003.

The proposed Project will not likely affect tribal trust resources. Because the action is not likely to affect tribal trust resources, no tribes would be affected and further tribal coordination is not necessary pursuant to the Secretarial Order (June 5, 1997).

## 1.2 Proposed Action

Proposed actions are defined in the Services' consultation regulations (50 CFR 402.02) as "all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas." Additionally, U.S. Code (16 U.S.C. 1855(b)(2)) further defines a Federal action as "any action authorized, funded, or undertaken or proposed to be authorized, funded, or undertaken by a Federal agency." Because the ONF proposes to fund and carry out the action that may affect listed resources, it must consult under ESA section 7(a)(2) and MSA section 305(b)(2).

The proposed Project includes replacing, modifying, or removing three culverts in the Trout Creek subbasin. The Project will improve fish passage. In Dick Creek, an existing culvert will be replaced with a streambed simulation culvert more appropriately sized for major flood events. In Trout Creek, an existing culvert will be reset deeper in the streambed to provide natural bottom conditions. In Cartwright Creek, the fill at the mouth of an existing culvert will be excavated and replaced to help prevent subsurface flow beneath the culvert. The BA indicates that MCR steelhead use these creeks for spawning. All work will be completed within the designated in-water work window of July 15<sup>th</sup> to October 31<sup>st</sup> (ODFW 2000) during fiscal year 2004, when adult MCR steelhead migration and spawning will not be occurring. Water will be diverted around the construction areas to reduce sediment inputs during implementation. If MCR steelhead are present within the construction areas, they will be removed by dip netting and released in a safe location near the capture site. Passage will be provided during construction.

### Dick Creek

The existing culvert is undersized and has a four-foot vertical drop at the outlet that hinders or prevents passage for MCR steelhead. The culvert will be replaced with a 9-foot diameter round corrugated metal pipe (CMP) culvert set in the channel with a 4% gradient to match the existing channel slope. The new culvert is expected to accommodate a 100-year flood event as well as provide passage for fish of all life stages. For the replacement, 700 cubic yards of fill will be removed and disposed of away from the Project area. Two rock cross veins will be constructed downstream of the culvert, and one will be constructed upstream of the culvert to act as grade control structures. The BA provided detailed descriptions and diagrams of the cross veins to be constructed. Rock material used for the cross veins will be a minimum of 18 inches in diameter. Pools will be constructed on the downstream side of each cross vein which will dissipate energy, and provide pool habitat for MCR steelhead. Approximately 270 cubic yards of material will be placed in the culvert to simulate a natural streambed. Approximately 2,001 cubic yards of material will be used as fill over the culvert to a depth of 11 feet. During construction, water will be diverted around the construction site in a 24-inch flexible plastic pipe. Both the inlet and outlet of the culvert will be protected with riprap to a 1.5-foot depth. All instream work will be completed during the designated in-water work window of July 1<sup>st</sup> to October 31<sup>st</sup>.

### Trout Creek

The existing Trout Creek culvert will be removed and reset deeper in the streambed to provide natural substrate for fish passage through the culvert and to improve hydraulic efficiency. Approximately 1,500 cubic yards of fill material will need to be removed when pulling out the culvert. The material removed will be stored on the existing road (Forest Road 2725) during construction. Once the culvert is removed, the bed will be excavated an additional 18 inches to set the culvert into the channel bed. Approximately 200 cubic yards of simulated streambed material will be placed in the culvert by hand. Equipment will operate from existing roads and streambanks. Water will be diverted around the construction area during implementation through a 24-inch plastic pipe or a plastic-lined ditch. All instream work will be completed during the designated in-water work window of July 1<sup>st</sup> to October 31<sup>st</sup>.

### Cartwright Creek

The porous material at the mouth of the existing culvert allows water to flow under the culvert rather than through it. To prevent or reduce the flow of water under the culvert, the upstream mouth of the culvert on Cartwright Creek will be excavated and material will be replaced with compacted pit run material, a less porous material. The new material is expected to improve streamflow through the culvert which will provide better passage conditions during low flows. All instream work will be completed during the designated in-water work window of July 1 to October 31.

## **1.3 Description of the Action Area**

An action area is defined by the Services' regulations (50 CFR Part 402) as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." The action area affected by the proposed action starts at the Project location on Dick Creek, Trout Creek, and Cartwright Creek and extends upstream or downstream for each site based on the potential for impairing fish passage, stream hydraulics, sediment and pollutant discharge, and the extent of riparian habitat modifications. Indirect effects may occur throughout the subbasin, where actions described in this Opinion lead to additional activities, or affect ecological functions, contributing to stream degradation. NOAA Fisheries believes that these areas are those that may reasonably be affected, temporarily or in the long term, by the proposed Project. The Project area serves as a spawning and rearing habitat as well as a migratory corridor for juvenile and adult MCR steelhead.

## **2. ENDANGERED SPECIES ACT - BIOLOGICAL OPINION**

The objective of this Opinion is to determine whether the proposed Project is likely to jeopardize the continued existence of the MCR steelhead.

## **2.1 Evaluating the Effects of the Proposed Action**

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA. In conducting analyses of habitat-altering actions under section 7 of the ESA, NOAA Fisheries uses the following steps of the consultation regulations and when appropriate combines them with the Habitat Approach (NMFS 1999): (1) Consider the biological requirements and status of the listed species; (2) evaluate the relevance of the environmental baseline in the action area to the species' current status; (3) determine the effects of the proposed or continuing action on the species, and whether the action is consistent with any available recovery strategy; and (4) determine whether the species can be expected to survive with an adequate potential for recovery under the effects of the proposed or continuing action, the effects of the environmental baseline, and any cumulative effects, and considering measures for survival and recovery specific to other life stages. In completing the jeopardy analysis, NOAA Fisheries determines whether the action under consultation, together with all cumulative effects when added to the environmental baseline, is likely to jeopardize the ESA-listed species. If jeopardy is found, NOAA Fisheries may identify reasonable and prudent alternatives for the action that avoid jeopardy.

The fourth step, jeopardy, requires a two-part analysis. The first part focuses on the action area and defines the proposed action's effects in terms of the species' biological requirements in that area (*i.e.*, effects on essential features). The second part focuses on the species itself. It describes the action's effects on individual fish, populations, or both, and places that impact in the context of the evolutionarily significant unit (ESU) as a whole. Ultimately, the analysis seeks to determine whether the proposed action is likely to jeopardize a listed species' continued existence.

### **2.1.1 Biological Requirements**

The first step NOAA Fisheries uses when applying ESA section 7(a)(2) to the listed ESUs considered in this Opinion includes defining the species' biological requirements within the action area. Biological requirements are population characteristics necessary for the listed ESUs to survive and recover to naturally-reproducing population sizes, at which time protection under the ESA would become unnecessary. The listed species' biological requirements may be described as characteristics of the habitat, population or both (McElhany *et al.*, 2000). Interim abundance targets for the MCR steelhead within the Deschutes River are represented in Table 1.

For actions that affect freshwater habitat, NOAA Fisheries may describe the habitat portion of a species' biological requirements in terms of a concept called properly functioning condition (PFC). The PFC is defined as the sustained presence of natural, habitat-forming processes in a watershed that are necessary for the long-term survival of the species through the full range of environmental variation (NMFS 1999). The PFC, then, constitutes the habitat component of a species' biological requirements. Although NOAA Fisheries is not required to use a particular procedure to describe biological requirements, it typically considers the status of habitat variables in a matrix of pathways and indicators (MPI) (NMFS 1996) that were developed to

describe PFC in forested montane watersheds. In the PFC framework, baseline environmental conditions are described as “properly functioning,” “at risk,” or “not properly functioning.”

### **2.1.2 Status and Generalized Life History of Listed Species**

In this step, NOAA Fisheries also considers the current status of the listed species within the action area, taking into account population size, trends, distribution, and genetic diversity. To assess the current status of the listed species, NOAA Fisheries starts with the determinations made in its decision to list the species and also considers any new data that is relevant to the species’ status.

The ONF found that the proposed Project is LAA MCR steelhead. Based on the life histories of this ESU, the ONF determined that it is likely that juvenile MCR steelhead may be adversely affected by the proposed action.

The MCR steelhead ESU was listed as threatened under the ESA by NOAA Fisheries on March 25, 1999 (64 FR 14517). Protective regulations for MCR steelhead were issued under section 4(d) of the ESA on July 10, 2000 (65 FR 42422). Biological information concerning the MCR steelhead is found in Busby *et al.* (1996). The major drainages in the MCR steelhead ESU are the Deschutes, John Day, Klickitat, Umatilla, Walla Walla, and Yakima river systems. NOAA Fisheries (2003) has indicated that the five-year average (geometric mean) abundance of natural MCR steelhead was up from previous years basin estimates in the ESU. The Klickitat, Yakima, Touchet, and Umatilla systems are all well below their interim abundance targets. The John Day and Deschutes are at or above their interim targets for abundance, however there is significant concern regarding the straying of fish into the Deschutes system from other ESUs (Table 1). The productivity estimate ( $\lambda$ ) of the MCR ESU is approximately 0.98, indicating that the productivity of MCR steelhead is slightly below its target of 1.0. NOAA Fisheries biological review team (BRT) has determined that the MCR ESU is likely to become endangered because of stock abundance and long-term productivity being depressed within the ESU.

MCR steelhead in the Trout Creek subbasin are genetically allied with other steelhead, typically the summer-run stocks (Busby *et al.*, 1996). MCR steelhead are widely distributed throughout the Trout Creek subbasin, and are found throughout the length of the creek. A redd count survey done in 2000 by Oregon Department of Fish and Wildlife (ODFW) determined that 88% of steelhead spawning activity took place in the upper reaches of the creek, above Ashwood Bridge at river mile 29.1 (Nelson 2000). During low flow years, like 2001, the spawning activity occurs downstream, as shown by an ODFW survey which found 62% of the steelhead spawned below the Ashwood Bridge in 2001 (Nelson 2001).

**Table 1.** Interim abundance targets for the MCR steelhead ESU (adapted from NOAA Fisheries 2003).

ESU/Spawning Aggregations*	Interim Abundance Targets	Interim Productivity Objective
Walla-Walla	2,600	Middle Columbia ESU populations are currently well below recovery levels. The geometric mean Natural Replacement Rate (NRR) will therefore need to be greater than 1.0
Umatilla	2,300	
<b>Deschutes (Below Pelton Dam Complex)</b>	<b>6,300</b>	
John Day		
North Fork	2,700	
Middle Fork	1,300	
South Fork	600	
Lower John Day	3,200	
Upper John Day	2,000	

\*Populations in bold are addressed in this Opinion

Steelhead in the basin are late-run stocks that enter the basin in early February with a peak in-migration in late March. Spawning typically begins in April and continues through May. Juveniles typically rear in freshwater through the following year, emigrating from February through May after two years of freshwater residence. Adults return after one or two years in the ocean. Additional life history information for MCR steelhead ESU can be found in Busby *et al.* (1996).

Essential features of the adult spawning, juvenile rearing, and adult and migratory habitat for this species are: Substrate, water quality, water quantity, water temperature, water velocity, cover/shelter, food (juvenile only), riparian vegetation, space, and safe passage conditions. (Bjornn and Reiser, 1991; NOAA Fisheries, 1996b; Spence *et al.*, 1996). The essential features that the proposed Project may affect are: Substrate, water quality, water temperature, water velocity, cover/shelter, food, riparian vegetation, and safe passage conditions.

### 2.1.3 Environmental Baseline in the Action Area

The environmental baseline is defined as: "the past and present impacts of all Federal, state, or private actions and other human activities in the action area, including the anticipated impacts of all proposed Federal projects in the action area that have undergone section 7 consultation and the impacts of state and private actions that are contemporaneous with the consultation in progress" (50 CFR 402.02). NOAA Fisheries evaluates the relevance of the environmental baseline in the action area to the species' current status. In describing the environmental

baseline, NOAA Fisheries evaluates essential features of habitat and the listed Pacific salmon ESUs affected by the proposed action.

In general, the environment for listed species in the Columbia River Basin (CRB), including those that migrate past or spawn upstream from the action area, has been dramatically affected by the development and operation of the Federal Columbia River Power System (FCRPS). Storage dams have eliminated mainstem spawning and rearing habitat, and have altered the natural flow regime of the Snake and Columbia Rivers, decreasing spring and summer flows, increasing fall and winter flow, and altering natural thermal patterns. Power operations cause fluctuation in flow levels and river elevations, affecting fish movement through reservoirs, disturbing riparian areas and possibly stranding fish in shallow areas as flows recede. The eight dams in the migration corridor of the Snake and Columbia Rivers kill or injure a portion of the smolts passing through the area. The low velocity movement of water through the reservoirs behind the dams slows the smolts' journey to the ocean and enhances the survival of predatory fish (Independent Scientific Group 1996, National Research Council 1996). Formerly complex mainstem habitats in the Columbia, Snake, and Willamette Rivers have been reduced, for the most part, to single channels, with floodplains reduced in size, and off-channel habitats eliminated or disconnected from the main channel (Sedell and Froggatt 1984; Independent Scientific Group 1996; and Coutant 1999). The amount of large woody debris in these rivers has declined, reducing habitat complexity and altering the rivers' food webs (Maser and Sedell 1994).

Other human activities that have degraded aquatic habitats or affected native fish populations in the CRB include stream channelization, elimination of wetlands, construction of flood control dams and levees, construction of roads (many with impassable culverts), timber harvest, splash dams, mining, water withdrawals, unscreened water diversions, agriculture, livestock grazing, urbanization, outdoor recreation, fire exclusion/suppression, artificial fish propagation, fish harvest, and introduction of non-native species (Henjum *et al.* 1994; Rhodes *et al.* 1994; National Research Council 1996; Spence *et al.* 1996; and Lee *et al.* 1997). In many watersheds, land management and development activities have: (1) Reduced connectivity (*i.e.*, the flow of energy, organisms, and materials) between streams, riparian areas, floodplains, and uplands; (2) elevated fine sediment yields, degrading spawning and rearing habitat; (3) reduced large woody material that traps sediment, stabilizes streambanks, and helps form pools; (4) reduced vegetative canopy that minimizes solar heating of streams; (5) caused streams to become straighter, wider, and shallower, thereby reducing rearing habitat and increasing water temperature fluctuations; (6) altered peak flow volume and timing, leading to channel changes and potentially altering fish migration behavior; and (7) altered floodplain function, water tables and base flows (Henjum *et al.* 1994; McIntosh *et al.* 1994; Rhodes *et al.* 1994; Wissmar *et al.* 1994; National Research Council 1996; Spence *et al.* 1996; and Lee *et al.* 1997).

To address problems inhibiting salmonid recovery in CRB tributaries, the Federal resource and land management agencies developed the *All H Strategy* (Federal Caucus 2000). Components of the *All H Strategy* commit these agencies to increased coordination and a fast start on protecting and restoring.

The Trout Creek subbasin combines multiple drainages and drains the North Slope of the Ochoco Mountains, east of Cougar Rock. This includes 115.5 miles of perennial streams and 41.2 miles of mapped intermittent streams. Predominant management activities in this subbasin include timber management, domestic water supply, recreation, agriculture, and livestock use. Much of the agriculture is irrigated with water diverted from Trout Creek or its tributaries.

Portions of stream reaches are no longer interacting with their floodplain. Many stream channels have been downcut, are headcutting, or are gullyng. Stream behavior like this can lower the water table, change the riparian vegetation composition, accelerate streambank erosion, simplify aquatic habitats, and change the hydrologic regime. Low pool frequencies and high stream sedimentation have reduced the availability of high quality spawning habitat in the subbasin. Temperatures regularly exceed 58 degrees F. Densities of steelhead and redband trout are extremely low in the Trout Creek subbasin.

Environmental baseline conditions within the action area were evaluated for the subject actions at the project level and watershed scales. The results of this evaluation, based on the “matrix of pathways and indicators” (MPI) described in *Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale* (NOAA Fisheries 1996), follow. This method assesses the current condition of instream, riparian, and watershed factors that collectively provide properly functioning aquatic habitat essential for the survival and recovery of the species.

Within the Trout Creek Subbasin, nine of the 18 habitat indicators in the MPI were rated as “functioning at risk” and include physical barriers, large woody debris, off channel habitat, refugia, width/depth ratio, floodplain connectivity, change in peak/base flows, road density and location, and riparian reserves. Eight of the 18 indicators were rated as “not properly functioning” and include temperature, sediment/turbidity, substrate embeddedness, pool frequency, pool quality, streambank condition, drainage network increase, and disturbance history. Chemical contamination/nutrients was rated as “properly functioning.” This information is summarized in Table 2.

**Table 2.** Summary of Watershed Conditions in the Action Area

MPI Pathways	MPI Indicators	Watershed and Parameter Condition <sup>1</sup>
		Trout Creek
Water Quality	Temperature	NPF
	Sediment	NPF
	Chemical Contaminants/ Nutrients	FAR
Access	Physical barriers	FAR
Habitat Elements	Substrate Embeddedness	NPF
	Large Woody Debris	FAR
	Pool Frequency	NPF
	Pool Quality	NPF
	Off Channel Habitat	FAR
	Refugia	FAR
Channel Conditions & Dynamics	Width/depth ratios	FAR
	Streambank Condition	NPF
	Floodplain connectivity	FAR
Flow/ Hydrology	Change in Peak Base Flow	FAR
	Drainage Network Increase	NPF
Watershed Condition	Road Density and Location	FAR
	Disturbance History	NPF
	RHCAs	FAR
<sup>1</sup> The condition of each MPI parameter is indicated in the following manner: PF = properly functioning, FAR= functioning at risk, NPF= not properly functioning, U=data unavailable		

The biological requirements of the listed species are not currently being met under the environmental baseline. Conditions in the action area would have to improve, and any further degradation of the baseline, or delay in improvement of these conditions would probably further

decrease the likelihood of survival and recovery of the listed species under the environmental baseline.

Pacific salmon and steelhead populations also are substantially affected by variation in the freshwater and marine environments. Ocean conditions are a key factor in the productivity of Pacific salmon populations. Stochastic events in freshwater (flooding, drought, snowpack conditions, volcanic eruptions, *etc.*) can play an important role in a species' survival and recovery, but those effects tend to be localized compared to the effects associated with the ocean. The survival and recovery of these species depends on their ability to persist through periods of low natural survival due to ocean conditions, climatic conditions, and other conditions outside the action area. Freshwater survival is particularly important during these periods because enough smolts must be produced so that a sufficient number of adults can survive to complete their oceanic migration, return to spawn, and perpetuate the species. Therefore it is important to maintain or restore essential features to sustain the ESU through these periods. Additional details about the importance of freshwater survival to Pacific salmon populations can be found in Federal Caucus (2000), NMFS (2000), and Oregon Progress Board (2000).

## **2.2 Analysis of Effects**

Effects of the action are defined as: "The direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with the action, that will be added to the environmental baseline" (50 CFR 402.02). Direct effects occur at the Project site and may extend upstream or downstream based on the potential for impairing the value of habitat for meeting the species' biological requirements. Indirect effects are defined in 50 CFR 402.02 as "those that are caused by the proposed action and are later in time, but still are reasonably certain to occur." They include the effects on listed species or habitat of future activities that are induced by the proposed action and that occur after the action is completed. "Interrelated actions are those that are part of a larger action and depend on the larger action for their justification" (50 CFR 402.02). "Interdependent actions are those that have no independent utility apart from the action under consideration" (50 CFR 402.02).

In the jeopardy analysis, NOAA Fisheries evaluates the effects of proposed actions on listed species and seeks to answer the question of whether the species can be expected to survive with an adequate potential for recovery. In watersheds where critical habitat has been designated, NOAA Fisheries must make a separate determination of whether the action will result in the destruction or adverse modification of critical habitat.

### **2.2.1 Habitat Effects**

The BA for the proposed Project provides an analysis of the effects of the proposed action on MCR steelhead in the action area. The analysis uses the MPI and procedures in NMFS (1996), the information in the BA, and the best scientific and commercial data available to evaluate

elements of the proposed action that have the potential to affect the listed fish or essential features of their habitat.

The Project is LAA MCR steelhead. The expected effects of the proposed Project are: (1) Sediment from the construction activities will increase in the short term, and will harass juvenile MCR steelhead rearing in the area; (2) the isolated work sites and temporary water diversions will restrict fish passage within the in-water work window, (3) harassment of juvenile MCR steelhead will occur as they are moved from the Project area; and (4) habitat access will be improved by creating improved passage for MCR steelhead. Habitat access will be partially restored by implementing this Project. All other habitat conditions in the MPI for Trout Creek subbasin will be maintained in the long term. The greatest potential for direct effects from the construction work will be delivery of additional sediment to the stream and the harassment of fish during construction.

Potential impacts to listed salmonids from the in-water and near-water construction activities include both direct and indirect effects. Potential direct effects include mortality from exposure to suspended sediments (turbidity) and contaminants resulting from construction. Potential indirect effects include behavioral changes resulting from elevated turbidity level during river bank and streambed habitat alterations.

Suspended sediment and turbidity influences on fish reported in the literature range from beneficial to detrimental (Sigler *et al.* 1984, Berg and Northcote 1985, Whitman *et al.* 1982, Gregory 1998). Elevated total suspended solids (TSS) conditions have been reported to enhance cover conditions, reduce piscivorous fish/bird predation rates, and improve survival. Elevated TSS conditions have also been reported to cause physiological stress, reduce growth, and adversely affect survival. Of key importance in considering the detrimental effects of TSS on fish are the frequency and the duration of the exposure, not just the TSS concentration.

Behavioral avoidance of turbid waters may be one of the most important effects of suspended sediments (DeVore *et al.* 1980, Birtwell *et al.* 1984, Scannell 1988). Salmonids have been observed to move laterally and downstream to avoid sediment plumes (McLeay *et al.* 1984, 1987, Sigler *et al.* 1984, Lloyd 1987, Scannell 1988, Servizi and Martens 1991). Juvenile salmonids tend to avoid streams that are chronically turbid, such as glacial streams or those disturbed by human activities, unless the fish need to traverse these streams along migration routes (Lloyd *et al.* 1987).

Fish that remain in turbid, or elevated TSS, waters experience a reduction in predation from piscivorous fish and birds (Gregory and Levings 1998). In systems with intense predation pressure, this provides a beneficial trade off (*e.g.*, enhanced survival) to the cost of potential physical effects (*e.g.*, reduced growth). Turbidity levels of about 23 Nephelometric Turbidity Units (NTU) have been found to minimize bird and fish predation risks (Gregory 1993). Exposure duration is a critical determinant of the occurrence and importance of physical or behavioral effects (Newcombe and MacDonald 1991). Salmonids have evolved in systems that periodically experience short-term pulses (days to weeks) of high suspended sediment loads,

often associated with flood events, and are adapted to such high pulse exposures. Adult and larger juvenile salmonids may be little affected by the high concentrations of suspended sediments that occur during storm and snowmelt runoff episodes (Bjornn and Reiser 1991). However, research shows that chronic exposure can cause physiological stress responses that can increase maintenance energy and reduce feeding and growth (Redding *et al.* 1987, Lloyd 1987, Servizi and Martens 1991).

Turbidity, at moderate levels, has the potential to adversely affect primary and secondary stream productivity, and at high levels, has the potential to injure and kill adult and juvenile fish, and may also interfere with feeding (Spence *et al.* 1996). Newly emerged salmonid fry may be vulnerable to even moderate amounts of turbidity (Bjornn and Reiser 1991). Other behavioral effects on fish, such as gill flaring and feeding changes, have been observed in response to pulses of suspended sediment (Berg and Northcote 1985). Fine, redeposited sediments also have the potential to adversely affect primary and secondary productivity (Spence *et al.* 1996), and to reduce incubation success (Bell 1991) and cover for juvenile salmonids (Bjornn and Reiser 1991). These effects are expected to be minimal due to the use of sediment control measures such as silt fences and straw bales and completing all instream construction activities during periods of low flow (July and August).

Increased sedimentation may also lead to increased embeddedness of spawning substrates downstream of the proposed Project. Instream work scheduled for this Project will take place during the in-water work window for the area, July 1 to October 31. Because water will be routed around the Project area during implementation, sedimentation rates are expected to be minimal. Disturbance of riparian vegetation could result from operation of heavy machinery near the stream and could lead to decreased shade, increased water temperatures, and decreased streambank stability until riparian vegetation is re-established. By conducting the proposed actions during the in-water work window, and utilizing protective measures such as silt fencing, the amount of sediment mobilized in the water column will be minimal. The ONF included several conservation measures in the Project design that will ensure riparian disturbance resulting from the construction activities will remain minimal. These include operating from existing roads wherever possible, and planting and seeding disturbed areas with native vegetation appropriate for the site. For these reasons, the disturbance should be minimal and temporary.

Fuel or other contaminant spills associated with use of heavy equipment may occur in or near the stream. As with all construction activities, accidental release of fuel, oil, and other contaminants may occur. Operation of back-hoes, excavators, and other equipment requires the use of fuel and lubricants, which, if spilled into the channel of a waterbody or into the adjacent riparian zone, can injure or kill aquatic organisms. Petroleum-based contaminants, such as fuel, oil, and some hydraulic fluids, contain poly-cyclic aromatic hydrocarbons (PAHs), which can be acutely toxic to salmonids at high levels of exposure and can also cause chronic lethal and acute and chronic sublethal effects to aquatic organisms (Neff 1985). Equipment will be stored and fueled outside of RHCAs. Exposure to herbicides can have lethal and sublethal effects on salmonids, aquatic invertebrates, aquatic vegetation, and target and non target riparian vegetation (Spence *et al.*

1996). The Project will not involve the use of any herbicides within RHCAs, and therefore these adverse effects are not expected to occur as a result of the Project.

Excavation in the stream channel associated with culvert and cross vein work will elevate the risk for chemical contamination of the aquatic environment within the action area. Because the potential for chemical contamination should be localized and brief, the probability of direct mortality is negligible. Scheduling the in-water work for the designated in-water work window of July 1 to October 31 will minimize the risk to adult MCR steelhead from chemical contamination during these activities.

The aforementioned adverse effects are expected to be temporary and of short duration. The maximum period of time during which construction activities will occur is one month. In the long term, all aquatic habitat factors will be maintained. Fish passage and stream channel morphology at the Project sites will improve as a result of the proposed actions.

Direct effects to juvenile MCR steelhead will occur in the form of harassment as they are moved from the action area. Fish biologists will move all juvenile MCR steelhead from the instream isolation area by seining, or dip netting. Once these juvenile MCR steelhead are frightened from cover and swim to open water, they become more susceptible to predation from larger fish and avian predators. The work area isolation will result in disturbance and stress to listed juvenile MCR steelhead. Stress approaching or exceeding the physiological tolerance limits of individual fish can impair reproductive success, growth, resistance to infectious diseases, and general survival (Wedemeyer *et al.* 1990). Mechanical injury is also possible during netting, holding, or transporting.

Manipulation of the streambed during implementation of the Project is expected to create sediment that may enter the stream. The short-term increase in turbidity could result in temporary reduction in feeding efficiency for juvenile steelhead within the action area. Increased sedimentation may also lead to increased embeddedness of spawning substrates downstream of the proposed Project. Diverting water around the disturbance within the channel will reduce continual sediment production during Project implementation. Additionally, the use of silt fences will help reduce the amount of sediment introduced into the active stream.

Disturbance of riparian vegetation could result in decreased shade, leading to increased water temperatures until riparian vegetation is re-established. Reduction in riparian vegetation is expected to be minimal because the proposed Project will disturb only the minimal area needed. Manipulation of streambanks will allow for mobilization of some sediment. In the event of a rain event during construction, sediment in excess of what may normally be expected could enter the flowing stream. Because disturbed areas will be revegetated with native vegetation after implementation, the increased risk of sediment input from bank disturbance will be reduced once the new vegetation begins to grow.

Placement of boulder cross veins in the stream channel to create step pools has potential to generate sediment during placement as well as while water scours around the new instream

structures. Because structures will be placed instream while flows are being diverted away from construction, the sediment generated is not expected to be substantial enough to do more than cause any fish in the area to temporarily vacate the vicinity. Although scour around new structures may generate some sediment, it is not expected to create sediment plumes, and would likely subside quickly. In addition, the structures are expected to create and maintain pool habitat and structure for juvenile MCR steelhead.

In the long term, the proposed Project will have beneficial effects on MCR steelhead habitat. Removal of the current culverts that are MCR steelhead passage impediments or barriers during high and low flows and installing culverts that simulate the natural streambed will allow for year-round passage to all life stages of MCR steelhead. The proposed Project will improve access to migration, spawning, and rearing habitat in the Trout Creek Subbasin. The proposed Project is also expected to allow normal passage of bedload material downstream.

### **2.2.2 Species Effects**

The effect that a proposed action has on particular essential features or MPI pathways can be translated into a likely effect on population growth rate. In the case of this consultation, it is not possible to quantify an incremental change in survival for MCR steelhead.

While population growth rates have been calculated at the large ESU scale, changes to the environmental baseline from the proposed action were described only within the action area (in this case, a subbasin). An action that improves habitat in a subbasin, and thus helps meet essential habitat feature requirements, may therefore, increase lambda for the portion of the ESU in the action area.

Based on the effects described above, the proposed Project will have a long-term, positive effect on the survival and recovery of the MCR steelhead. Because Trout Creek is a small subbasin in comparison to the range of the MCR steelhead ESU, and the Project scale is much smaller than the ESU, a population increase may not be measurable at the ESU scale. However, because access is being restored in areas of a subbasin which the MCR steelhead currently use, an increase in the distribution and/or population within the subbasin is expected to occur.

### **2.2.3 Cumulative Effects**

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." These activities within the action area also have the potential to adversely affect the listed species. Future Federal actions, including the ongoing operation of hydropower systems, hatcheries, fisheries, and land management activities are being reviewed through separate section 7 consultation processes. Federal actions that have already undergone section 7 consultations have been added to the description of the environmental baseline in the action area.

State, tribal, and local government actions will likely be in the form of legislation, administrative rules or policy initiatives. Non-federal actions may encompass changes in land and water uses—including ownership and intensity—any of which could adversely affect listed species or their habitat. State and local actions are subject to political, legislative, and fiscal uncertainties.

The ONF identified no specific private or state actions that are reasonably certain to occur in the future that would affect MCR steelhead or their habitat within the action area. NOAA Fisheries expects slight improvements in MCR steelhead reproductive success because of the improved access to habitat. NOAA Fisheries is not aware of any specific future actions which are reasonably certain to occur on non-federal lands. NOAA Fisheries assumes that future private, tribal, and state actions will continue at similar intensities as in recent years.

#### **2.2.4 Consistency with Listed Species ESA Recovery Strategies**

Recovery is defined by NOAA Fisheries regulations (50 CFR 402) as an “improvement in the status of listed species to the point at which listing is no longer appropriate under the criteria set out in section 4 (a)(1) of the Act.” Recovery planning is underway for listed Pacific salmon and steelhead in the Northwest with technical recovery teams identified for each recovery domain. Recovery planning will help identify measures to conserve listed species and increase the survival of each life stage. NOAA Fisheries also intends that recovery planning identify the areas/stocks most critical to species conservation and recovery and thereby, evaluate proposed actions on the basis of their effects on those areas/stocks.

Recovery planning will identify the feasible measures that are needed in each stage of the salmonid life cycle for conservation and survival within a reasonable time. Measures are feasible if they are expected both to be implemented and to result in the required biological benefit. A time period for recovery is reasonable depending on the time requirements for implementation of the measures and the confidence in the survival of the species while the plan is implemented. The plan must demonstrate the feasibility of its measures, the reasonableness of its time requirements, and how the elements are likely to achieve the conservation and survival of the listed species based on the best science available.

NOAA Fisheries has developed guidelines for basin-level, multispecies recovery planning on which individual, species-specific recovery plans can be founded. “Basin-level” encompasses habitat, harvest, hatcheries, and hydropower. The recovery planning analysis is contained in the document entitled *Conservation of Columbia Basin Fish: Final Basinwide Salmon Recovery Strategy* (hereafter, the Basinwide Recovery Strategy [Federal Caucus 2000]). The Basinwide Recovery Strategy will be used to guide recovery planning for MCR steelhead. The recovery plan will provide the particular statutorily required elements of recovery goals, criteria, management actions, and time estimates that are not developed in the Basinwide Recovery Strategy.

Among other things, the Basinwide Recovery Strategy calls for restoration of degraded habitats on a priority basis to produce significant measurable benefits for listed anadromous and resident

fish. Immediate and long-term priorities for restoration measures relevant to this consultation include the following general habitat improvements for tributary reaches:

- Restoring tributary flows.
- Addressing passage obstructions.
- Protecting the currently productive habitat.
- Increasing the amount of habitat.
- Improve water quality.

Until the species-specific recovery plans are developed, the FCRPS Opinion and the related Basinwide Recovery Strategy provides the best guidance for judging the significance of an individual action relative to the species-level biological requirements. In the absence of completed recovery plans, NOAA Fisheries strives to ascribe the appropriate significance to actions to the extent available information allows. Where information is not available on the recovery needs of the species, either through recovery planning or otherwise, NOAA Fisheries applies a conservative substitute that approximates what would be expected of an action if such information were available.

The ONF has specific commitments to uphold under the Basinwide Salmon Recovery Strategy. For Federal lands, PACFISH, the Northwest Forest Plan, and land management plans define these commitments. The proposed action is consistent with the specific commitments and primary objectives of the Basinwide Salmon Recovery Strategy to correct passage obstructions and increase habitat.

## **2.3 Conclusions**

NOAA Fisheries has determined that, when the effects of the subject action addressed in this Opinion are added to the environmental baseline and cumulative effects occurring in the action area, they are not likely to jeopardize the continued existence of MCR steelhead.

NOAA Fisheries' conclusions are based on the following considerations: (1) All instream work will occur during the in-water work window for this area (July 1 to October 31), and instream work will be limited to the amount described in the BA; (2) all disturbed soils will be replanted with native vegetation; (3) work area isolation and fish relocation operations will be conducted by experienced ONF staff monitored by a fish biologist to help minimize stress and mortality to listed steelhead; (4) a net increase in fish habitat access will result from the Project activities. Thus, the proposed action is not expected to impair currently properly functioning habitats, appreciably reduce the functioning of already impaired habitats, or retard the long-term progress of impaired habitats toward proper functioning condition essential to the long-term survival and recovery at the population or ESU scale.

## **2.4 Conservation Recommendations**

Conservation recommendations are defined as “discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information” (50 CFR 402.02). Section 7 (a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. NOAA Fisheries has no conservation recommendations to make at this time regarding the action addressed in this Opinion.

## **2.5 Reinitiation of Consultation**

As provided in 50 CFR 402.16, reinitiation of formal consultation is required if: (1) The amount or extent of taking specified in the incidental take statement is exceeded, or is expected to be exceeded; (2) new information reveals effects of the action may affect listed species in a way not previously considered; (3) the action is modified in a way that causes an effect on listed species that was not previously considered; or (4) a new species is listed or critical habitat is designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease, pending conclusion of the reinitiated consultation. The ONF may also be required to reinitiate consultation if the proposed actions are not consistent with conservation measures developed through the pending consultation on land and resource management plans for Federal land management units in the Mid- and Upper Columbia River basins. To reinitiate consultation, ONF should contact the NOAA Fisheries Habitat Conservation Division, Oregon State Habitat Office and refer to: 2003/00925.

## **2.6 Incidental Take Statement**

The ESA at section 9 [16 USC 1538] prohibits take of endangered species. The prohibition of take is extended to threatened anadromous salmonids by section 4(d) rule [50 CFR 223.203]. Take is defined by the statute as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” [16 USC 1532(19)] Harm is defined by regulation as “an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavior patterns, including, breeding, spawning, rearing, migrating, feeding or sheltering.” [50 CFR 222.102] Harass is defined as “an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering.” [50 CFR 17.3] Incidental take is defined as “takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant.” [50 CFR 402.02] The ESA at section 7(o)(2) removes the prohibition from any incidental taking that is in compliance with the terms and conditions specified in a section 7(b)(4) incidental take statement [16 USC 1536].

An incidental take statement specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply to implement the reasonable and prudent measures.

### **2.6.1 Amount or Extent of Take**

The proposed action is reasonably certain to result in incidental take of juvenile MCR steelhead. NOAA Fisheries is reasonably certain the incidental take described here will occur because:

(1) The listed species are known to occur in the action area; and (2) the proposed action is likely to cause impacts significant enough to cause death or injury, or impair feeding, breeding, migrating, or sheltering for the listed species.

Some level of incidental take is expected to result from direct injury or death of juvenile MCR steelhead during instream work. The temporary increase in sediment and turbidity is expected to cause fish to avoid disturbed areas of the stream, both within and downstream of the Project area. Effects from turbidity are expected to be of short duration, because turbidity levels will quickly return to preconstruction levels once instream work is completed. The potential for incidental take in the form of death or sub-lethal effects also exists if toxicants are introduced into the water. Take in the form of behavior modification (avoidance) is expected from riparian disturbance, vegetation removal, and decreased shade. This take is expected to be reduced as newly planted riparian vegetation is established.

Because of the inherent biological characteristics of aquatic species such as MCR steelhead, the likelihood of discovering take attributable to this action is very limited. Take associated with the effects of actions such as these are largely unquantifiable in the short term, and may not be measurable as long-term effects on the species' habitat or population levels. Therefore, although NOAA Fisheries expects the habitat-related effects of these actions to cause some low level incidental take, the best scientific and commercial data available are not sufficient to enable NOAA Fisheries to estimate a specific amount of incidental take because of those habitat-related effects. In instances such as these, NOAA Fisheries designates the expected level of take as "unquantifiable".

In addition, incidental take in the form of capture and possible direct mortality is expected during the work isolation and fish relocation operation. The ONF will not use electroshocking to remove fish from the Project area so as to minimize potential effects caused by fish relocation activities in warmer waters. Because of warm temperatures and current limited fish distribution within the Project area during the in-water work window, NOAA Fisheries expects very few fish to be present in the Project area during implementation. Because few fish are expected to be present, and the fish salvage operation is expected to cause very little or no direct mortality, the expected level of juvenile MCR steelhead killed should not exceed five individual juvenile steelhead per culvert location. Project design precautionary measures planned by the ONF for the fish salvage operation should keep direct mortality to a minimum. The authorized take includes only take caused by the proposed action within the action area as defined in this

Opinion. As such, the action area for proposed Project includes the immediate portions of the subbasin containing the Project, and extends upstream 150 feet above each construction area and downstream 300 feet below each construction area.

### **2.6.2 Reasonable and Prudent Measures**

Reasonable and prudent measures (RPMs) are non-discretionary measures to minimize take, that may or may not already be part of the description of the proposed action. They must be implemented as binding conditions for the exemption in section 7(o)(2) to apply. The ONF has the continuing duty to regulate the activities covered in this incidental take statement. If the ONF fails to require the applicants to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, or fails to retain the oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse. NOAA Fisheries believes that activities carried out in a manner consistent with these reasonable and prudent measures, except those otherwise identified, will not necessitate further site-specific consultation. Activities which do not comply with all relevant reasonable and prudent measures will require further consultation.

NOAA Fisheries believes that the following reasonable and prudent measures are necessary and appropriate to minimize take of MCR steelhead resulting from implementation of the action.

The ONF shall:

1. Avoid or minimize the likelihood of incidental take by completing conservation practices as necessary to ensure that adverse effects to riparian and aquatic habitats will be brief, minor, and scheduled to occur at times that are least sensitive to the species life-cycle.
2. Complete a comprehensive monitoring and reporting program to confirm this Opinion is meeting its objective of avoiding and minimizing take from permitted activities.

### **2.6.3 Terms and Conditions**

To be exempt from the prohibitions of section 9 of the ESA, the action must be implemented in compliance with the following terms and conditions, which implement the reasonable and prudent measures described above for each category of activity. These terms and conditions are non-discretionary.

1. To implement reasonable and prudent measure #1 (general construction, riparian disturbance, and in-water work), the ONF shall ensure that:
  - a. Minimum area. Confine construction impacts to the minimum area necessary to complete the Project.

- b. Timing of in-water work. Work below the bankfull elevation<sup>1</sup> will be completed between July 1 and October 31, unless otherwise approved in writing by NOAA Fisheries.
- c. Cessation of work. Cease Project operations under any high flow conditions that may result in inundation of the Project area, except for efforts to avoid or minimize resource damage.
- d. Fish screens. Install, operate and maintain a fish screen according to NOAA Fisheries' fish screen criteria<sup>2</sup> on each water intake used for Project construction, including pumps used to isolate an in-water work area.
- e. Pollution and Erosion Control Plan. Prepare and carry out a pollution and erosion control plan to prevent pollution caused by surveying or construction operations. The plan must be available for inspection on request by NOAA Fisheries.
  - i. Plan Contents. The pollution and erosion control plan will contain the pertinent elements listed below, and meet requirements of all applicable laws and regulations.
    - (1) The name and address of the party(s) responsible for accomplishment of the pollution and erosion control plan.
    - (2) Practices to prevent erosion and sedimentation associated with access roads, stream crossings, drilling sites, construction sites, borrow pit operations, haul roads, equipment and material storage sites, fueling operations, staging areas, and roads being decommissioned.
    - (3) Practices to confine, remove, and dispose of excess concrete, cement, grout, and other mortars or bonding agents, including measures for washout facilities.
    - (4) A description of any regulated or hazardous products or materials that will be used for the Project, including procedures for inventory, storage, handling, and monitoring.
    - (5) A spill containment and control plan with notification procedures, specific cleanup and disposal instructions for different products, quick response containment and cleanup measures that will be available on the site, proposed methods for disposal of spilled materials, and employee training for spill containment.
    - (6) Practices to prevent construction debris from dropping into any stream or waterbody, and to remove any material that does drop with a minimum disturbance to the streambed and water quality.

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<sup>1</sup> 'Bankfull elevation' means the bank height inundated by a 1.5 to 2-year average recurrence interval and may be estimated by morphological features such average bank height, scour lines and vegetation limits.

<sup>2</sup> National Marine Fisheries Service, *Juvenile Fish Screen Criteria* (revised February 16, 1995) and *Addendum: Juvenile Fish Screen Criteria for Pump Intakes* (May 9, 1996) (guidelines and criteria for migrant fish passage facilities, and new pump intakes and existing inadequate pump intake screens) (<http://www.nwr.noaa.gov/1hydroweb/hydroweb/ferc.htm>).

- ii. Inspection of erosion controls. During construction, monitor instream turbidity and inspect all erosion controls daily during the rainy season and weekly during the dry season, or more often as necessary, to ensure the erosion controls are working adequately.<sup>3</sup>
  - (1) If monitoring or inspection shows that the erosion controls are ineffective, mobilize work crews immediately to make repairs, install replacements, or install additional controls as necessary.
  - (2) Remove sediment from erosion controls once it has reached 1/3 of the exposed height of the control.
- f. Construction discharge water. Treat all discharge water created by construction (*e.g.*, concrete washout, pumping for work area isolation, vehicle wash water, drilling fluids) as follows:
  - i. Water quality. Design, build and maintain facilities to collect and treat all construction discharge water using the best available technology applicable to site conditions. Provide treatment to remove debris, nutrients, sediment, petroleum hydrocarbons, metals and other pollutants likely to be present.
  - ii. Discharge velocity. If construction discharge water is released using an outfall or diffuser port, velocities may not exceed 4 feet per second, and the maximum size of any aperture may not exceed one inch.
  - iii. Pollutants. Do not allow pollutants including green concrete, contaminated water, silt, welding slag, sandblasting abrasive, or grout cured less than 24 hours to contact any wetland or the 2-year floodplain.
- g. Preconstruction activity. Complete the following actions before significant<sup>4</sup> alteration of the Project area.
  - i. Marking. Flag the boundaries of clearing limits associated with site access and construction to prevent ground disturbance of critical riparian vegetation, wetlands, and other sensitive sites beyond the flagged boundary.
  - ii. Emergency erosion controls. Ensure that the following materials for emergency erosion control are onsite.
    - (1) A supply of sediment control materials (*e.g.*, silt fence, straw bales<sup>5</sup>).
    - (2) An oil-absorbing, floating boom whenever surface water is present.

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<sup>3</sup> 'Working adequately' means that Project activities do not increase ambient stream turbidity by more than 10% above background 100 feet below the discharge, when measured relative to a control point immediately upstream of the turbidity causing activity.

<sup>4</sup> 'Significant' means an effect can be meaningfully measured, detected or evaluated.

<sup>5</sup> When available, certified weed-free straw or hay bales will be used to prevent introduction of noxious weeds.

- iii. Temporary erosion controls. All temporary erosion controls will be in-place and appropriately installed downslope of Project activity within the riparian area until site restoration is complete.
- h. Heavy Equipment. Restrict use of heavy equipment as follows:
  - i. Choice of equipment. When heavy equipment will be used, the equipment selected will have the least adverse effects on the environment (*e.g.*, minimally-sized, low ground pressure equipment).
  - ii. Vehicle and material staging. Store construction materials and fuel, and operate, maintain, and store vehicles as follows:
    - (1) To reduce the staging area and potential for contamination, ensure that only enough supplies and equipment to complete a specific job will be stored on-site.
    - (2) Complete vehicle staging, cleaning, maintenance, refueling, and fuel storage in a vehicle staging area placed outside of any RHCA, unless otherwise approved in writing by NOAA Fisheries.
    - (3) Inspect all vehicles operated within an RHCA daily for fluid leaks before leaving the vehicle staging area. Repair any leaks detected in the vehicle staging area before the vehicle resumes operation. Document inspections in a record that is available for review on request by NOAA Fisheries.
    - (4) Before operations begin and as often as necessary during operation, steam clean all equipment that will be used below bankfull elevation until all visible external oil, grease, mud, and other visible contaminants are removed.
    - (5) Diaper all stationary power equipment (*e.g.*, generators, cranes, stationary drilling equipment) operated within any RHCA to prevent leaks, unless suitable containment is provided to prevent potential spills from entering any stream or waterbody.
  - i. Site preparation. Conserve native materials for site restoration.
    - i. If possible, leave native materials where they are found.
    - ii. If materials are moved, damaged, or destroyed, replace them with a functional equivalent during site restoration.
    - iii. Stockpile any large wood<sup>6</sup>, native vegetation, weed-free topsoil, and native channel material displaced by construction for use during site restoration.
  - j. Isolation of in-water work area. If adult or juvenile fish are reasonably certain to be present, or if the work area is 300 feet upstream of spawning habitats, completely isolate the work area from the active flowing stream using inflatable

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<sup>6</sup> For purposes of this Opinion only, ‘large wood’ means a tree, log, or rootwad big enough to dissipate stream energy associated with high flows, capture bedload, stabilize streambanks, influence channel characteristics, and otherwise support aquatic habitat function, given the slope and bankfull channel width of the stream in which the wood occurs. See, Oregon Department of Forestry and Oregon Department of Fish and Wildlife, *A Guide to Placing Large Wood in Streams*, May 1995 ([www.odf.state.or.us/FP/RefLibrary/LargeWoodPlacemntGuide5-95.doc](http://www.odf.state.or.us/FP/RefLibrary/LargeWoodPlacemntGuide5-95.doc)).

- bags, sandbags, sheet pilings, or similar materials, unless otherwise approved in writing by NOAA Fisheries.
- k. Capture and release. Before and intermittently during pumping to isolate an in-water work area, attempt to capture and release fish from the isolated area using trapping, seine, or other methods as are prudent to minimize risk of injury.
- i. Fish Handling and Transfer Protocols – Fish Capture Alternatives. Where the capture, removal, and relocation of ESA-listed fish are required, the ONF shall:
- (1) Have a fisheries biologist experienced with work area isolation and competent to ensure the safe handling of all ESA-listed fish conduct or supervise the operation
  - (2) Use one or combination of the following methods to most effectively capture ESA-listed fish and minimize harm.
    - (a) Hand Netting. Collect fish by hand or dip nets, as the area is slowly dewatered.
    - (b) Seining. Seine using a net with mesh of such a size as to ensure entrapment of the residing ESA-listed fish.
    - (c) Minnow Trap. Place minnow traps overnight and in conjunction with seining.
  - (3) Fish Storage and Release. Where the capture, removal, and relocation of ESA-listed fish are required the ONF shall:
    - (a) Handle captured fish with extreme care and keep these fish in water to the maximum extent possible for the least amount of time during transfer procedures. The use of a sanctuary net is recommended.<sup>7</sup>
    - (b) Utilize large buckets (five-gallon or greater) and minimize the number of fish stored in each bucket to prevent overcrowding
    - (c) Place large fish in buckets separate from smaller prey-sized fish.
    - (d) Monitor water temperature in buckets and well-being of captured fish.
    - (e) Release fish upstream of the isolated reach in a pool or area that provides cover and flow refuge after fish have recovered from stress of capture.
    - (f) Document all fish injuries or mortalities.
- l. Earthwork. Complete earthwork (including drilling, excavation, dredging, filling and compacting) as quickly as possible.
- i. Site stabilization. Stabilize all disturbed areas following any break in work unless construction will resume within four days.

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<sup>7</sup> A sanctuary net is a net that has a solid bottom bag that allows for the retention of a small amount of water in the net, thus allowing for less potential impact to netted fish from the net mesh.

- ii. Source of materials. Obtain boulders, rock, woody materials and other natural construction materials used for the Project outside the riparian area.
- m. Site restoration. Prepare and carry out a site restoration plan as necessary to ensure that all streambanks, soils and vegetation disturbed by the Project are cleaned up and restored as follows. Make the written plan available for inspection on request by the NOAA Fisheries.
  - i. General considerations.
    - (1) Restoration goal. The goal of site restoration is renewal of habitat access, water quality, production of habitat elements (*e.g.*, large woody debris), channel conditions, flows, watershed conditions, and other ecosystem processes that form and maintain productive fish habitats.
    - (2) Streambank shaping. Restore damaged streambanks to a natural slope, pattern, and profile suitable for establishment of permanent woody vegetation, unless precluded by pre-Project conditions (*e.g.*, a natural rock wall).
    - (3) Revegetation. Replant each area requiring revegetation before the first April 15 following construction. Use a diverse assemblage of species native to the Project area or region, including grasses, forbs, shrubs and trees. Noxious or invasive species may not be used.
    - (4) Pesticides. Take of ESA-listed species caused by any aspect of pesticide use is not included in the exemption to the ESA take prohibitions provided by this incidental take statement. Pesticide use must be evaluated in an individual consultation, although mechanical or other methods may be used to control weeds and unwanted vegetation.
    - (5) Fertilizer. Do not apply surface fertilizer within 50 feet of any stream channel.
  - ii. Plan contents. Include each of the following elements:
    - (1) Responsible party. The name and address of the party(s) responsible for meeting each component of the site restoration requirements, including providing and managing any financial assurances and monitoring necessary to ensure restoration success.
    - (2) Baseline information. This information may be obtained from existing sources (*e.g.*, land use plans, watershed analyses, subbasin plans), where available.
      - (a) A functional assessment of adverse effects, *i.e.*, the location, extent and function of the riparian and aquatic resources that will be adversely affected by construction and operation of the Project.
      - (b) The location and extent of resources surrounding the restoration site, including historic and existing conditions.

- (3) Goals and objectives. Restoration goals and objectives that describe the extent of site restoration necessary to offset adverse effects of the Project, by aquatic resource type.
- (4) Performance standards. Use these standards to help design the plan and to assess whether the restoration goal is met. While no single criterion is sufficient to measure success, the intent is that these features should be present within reasonable limits of natural and management variation.
  - (a) Bare soil spaces are small and well dispersed.
  - (b) Soil movement, such as active rills or gullies and soil deposition around plants or in small basins, is absent or slight and local.
  - (c) If areas with past erosion are present, they are completely stabilized and healed.
  - (d) Plant litter is well distributed and effective in protecting the soil with few or no litter dams present.
  - (e) Native woody and herbaceous vegetation, and germination microsites, are present and well distributed across the site.
  - (f) Vegetation structure is resulting in rooting throughout the available soil profile.
  - (g) Plants have normal, vigorous growth form, and a high probability of remaining vigorous, healthy and dominant over undesired competing vegetation.
  - (h) High impact conditions confined to small areas necessary access or other special management situations.
  - (i) Streambanks have less than 5% exposed soils with margins anchored by deeply rooted vegetation or coarse-grained alluvial debris.
  - (j) Few upland plants are in valley bottom locations, and a continuous corridor of shrubs and trees provide shade for the entire streambank.
- (5) Work plan. Develop a work plan with sufficient detail to include a description of the following elements, as applicable.
  - (a) Boundaries for the restoration area.
  - (b) Restoration methods, timing, and sequence.
  - (c) Water supply source, if necessary.
  - (d) Woody native vegetation appropriate to the restoration site.<sup>8</sup> This must be a diverse assemblage of species that are native to the Project area or region, including grasses, forbs, shrubs and trees. This may include allowances for natural regeneration from an existing seed bank or planting.

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<sup>8</sup> Use references sites to select vegetation for the mitigation site whenever feasible. Historic reconstruction, vegetation models, or other ecologically-based methods may also be used as appropriate.

- (e) A plan to control exotic invasive vegetation.
- (f) Elevation(s) and slope(s) of the restoration area to ensure they conform with required elevation and hydrologic requirements of target plant species.
- (g) Geomorphology and habitat features of stream or other open water.
- (h) Site management and maintenance requirements.

2. To implement reasonable and prudent measure #2 (monitoring), the ONF shall:

- a. Reporting. Within one year of Project completion, the ONF will submit a monitoring report to NOAA Fisheries describing the ONF's success in meeting the terms and conditions contained in this Opinion. The monitoring report will include the following information:
  - i. Project identification
    - (1) Project name.
    - (2) Type of activity.
    - (3) Project location, by 5<sup>th</sup> field HUC and by latitude and longitude as determined from the appropriate USGS 7-minute quadrangle map.
    - (4) ONF contact person.
    - (5) Starting and ending dates for work completed.
  - ii. Photo documentation. Photos of habitat conditions at the Project and any compensation site(s), before, during, and after Project completion.<sup>9</sup>
    - (1) Include general views and close-ups showing details of the Project and Project area, including pre and post construction.
    - (2) Label each photo with date, time, Project name, photographer's name, and a comment about the subject.
  - iii. Other data. Additional Project-specific data, as appropriate.
    - (1) Work cessation. Dates work ceased due to high flows, if any.
    - (2) Fish screen. Evidence of compliance with NOAA Fisheries' fish screen criteria.
    - (3) Pollution control. A summary of pollution and erosion control inspections, including any erosion control failure, contaminant release, and correction effort.
    - (4) Site preparation.
      - (a) Total cleared area – riparian and upland.
      - (b) Total new impervious area.
    - (5) Isolation of in-water work area, capture and release.
      - (a) Supervisory fish biologist – name and address.
      - (b) Methods of work area isolation and take minimization.

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<sup>9</sup> Relevant habitat conditions may include characteristics of channels, eroding and stable streambanks in the Project area, riparian vegetation, water quality, flows at base, bankfull and over-bankfull stages, and other visually discernable environmental conditions at the Project area, and upstream and downstream of the Project.

- (c) Stream conditions before, during and within one week after completion of work area isolation.
    - (d) Means of fish capture.
    - (e) Number of MCR steelhead captured.
    - (f) Location and condition of all fish released.
    - (g) Any incidence of observed injury or mortality of listed species.
  - (6) Streambank protection.
    - (a) Type and amount of materials used.
    - (b) Project size – one bank or two, width and linear feet.
  - (7) Site restoration. Photo or other documentation that site restoration performance standards were met.
  - (8) Long-term habitat loss. The same elements apply as for monitoring site restoration.
- b. Effectiveness monitoring. Gather any other data or analyses the ONF deems necessary or helpful to complete an assessment of habitat trends in stream and riparian conditions as a result of this Project. The ONF may use existing monitoring efforts for this purpose if those efforts can provide information specific to the objective of identifying habitat trends.
- c. Salvage notice.

If a sick, injured, or dead specimen of a threatened or endangered species is found, the finder must notify the Vancouver Field Office of NOAA Fisheries Law Enforcement at 360.418.4246. The finder must take care in handling sick or injured specimens to ensure effective treatment, and in handling dead specimens to preserve biological material in the best possible condition for later analysis of cause of death. The finder also has the responsibility to carry out instructions provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not disturbed unnecessarily.

- d. Report submission. Submit a copy of the report to the Oregon Office of NOAA Fisheries.

Oregon State Habitat Director  
Habitat Conservation Division  
National Marine Fisheries Service  
**Attn: 2003/00925**  
525 NE Oregon Street  
Portland, OR 97232

### **3. MAGNUSON-STEVENSON ACT**

#### **3.1 Statutory Requirements**

The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance EFH for those species regulated under a Federal fisheries management plan.

Pursuant to the MSA:

- Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH (section 305(b)(2)).
- NOAA Fisheries must provide conservation recommendations for any Federal or state action that may adversely affect EFH (section 305(b)(4)(A));
- Federal agencies must provide a detailed response in writing to NOAA Fisheries within 30 days after receiving EFH conservation recommendations. The response must include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with NOAA Fisheries EFH conservation recommendations, the Federal agency must explain its reasons for not following the recommendations (section 305(b)(4)(B)).

The EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA section 3). For the purpose of interpreting this definition of EFH: Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities; necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50 CFR 600.10). Adverse effect means any impact which reduces quality and/or quantity of EFH, and may include direct (*e.g.*,

contamination or physical disruption), indirect (*e.g.*, loss of prey or reduction in species fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810).

The EFH consultation with NOAA Fisheries is required for any Federal agency action that may adversely affect EFH, including actions that occur outside EFH, such as certain upstream and upslope activities.

The objectives of this EFH consultation are to determine whether the proposed action may adversely affect designated EFH and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects on EFH.

### **3.2 Identification of EFH**

Pursuant to the MSA, the Pacific Fishery Management Council (PFMC) has designated EFH for three species of Federally-managed Pacific salmon: Chinook (*Oncorhynchus tshawytscha*); coho (*O. kisutch*); and Puget Sound pink salmon (*O. gorbuscha*) (PFMC 1999). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other waterbodies currently or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable, man-made barriers (as identified by the PFMC 1999), and longstanding, naturally-impassable barriers (*i.e.*, natural waterfalls in existence for several hundred years). Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the *Pacific Coast Salmon Plan* (PFMC 1999). Assessment of potential adverse effects to these species' EFH from the proposed action is based, in part, on this information.

### **3.3 Proposed Actions**

The proposed action and action area are detailed above in sections 1.2 and 1.3 of this document. The action area includes habitats that have been designated as EFH for various life-history stages of chinook and coho salmon.

### **3.4 Effects of Proposed Action on EFH**

The effects on chinook and coho salmon are the same as those for MCR steelhead and are described in detail in section 2.2.1 of this document, the proposed action may result in short-term and long-term adverse effects on a variety of habitat parameters. These adverse effects are:

1. Riparian disturbance from accessing construction area and construction activities performed from the bank.
2. Increased sedimentation from instream construction activities.

### **3.5 Conclusion**

NOAA Fisheries concludes that the proposed action will adversely affect designated EFH for chinook and coho salmon.

### **3.6 EFH Conservation Recommendations**

Pursuant to section 305(b)(4)(A) of the MSA, NOAA Fisheries is required to provide EFH conservation recommendations to Federal agencies regarding actions that may adversely affect EFH. NOAA Fisheries understands that the conservation measures described in the Biological Assessment will be implemented by the ONF, and believes that these measures are sufficient to minimize, to the maximum extent practicable, the following EFH effects: (1) Riparian disturbance; and (2) increased sedimentation. Although, these conservation measures are not sufficient to fully address the remaining adverse effects to EFH, specific Terms and Conditions outlined in section 2.7.3 are generally applicable to designated EFH for chinook salmon, and do address these adverse effects. Consequently, NOAA Fisheries identifies the following terms and conditions as our EFH conservation recommendations:

Term and Condition 1 will minimize riparian disturbance, sedimentation and pollution within the Trout Creek subbasin as a result of the Project construction.

### **3.7 Statutory Response Requirement**

Pursuant to the MSA (section 305(b)(4)(B)) and 50 CFR 600.920(j), Federal agencies are required to provide a detailed written response to NOAA Fisheries' EFH conservation recommendations within 30 days of receipt of these recommendations. The response must include a description of measures proposed to avoid, mitigate, or offset the adverse impacts of the activity on EFH. In the case of a response that is inconsistent with the EFH conservation recommendations, the response must explain the reasons for not following the recommendations, including the scientific justification for any disagreements over the anticipated effects of the proposed action and the measures needed to avoid, minimize, mitigate, or offset such effects.

### **3.8 Supplemental Consultation**

The ONF must reinitiate EFH consultation with NOAA Fisheries if the proposed action is substantially revised in a manner that may adversely affect EFH, or if new information becomes available that affects the basis for NOAA Fisheries' EFH conservation recommendations (50 CFR 600.920(l)).

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